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Effects of Changes in . . .

GRAZING FEES AND PERMITTED USE OF PUBLIC RANGELANDS ON INCOMES OF WESTERN LIVESTOCK RANCHES

U. S. DEPARTMENT OF AGRICULTURE ECONOMIC RESEARCH SERVICE ERS 248

FOREWORD

This study was made by the Economic Research Service and the Forest Service, both of the U.S. Department of Agriculture, and by the Bureau of Land Management of the U.S. Department of Interior, the Montana State College, the Utah State University, and the University of Arizona. Although the data in the report are for 1960, the relative effects would be essentially the same in 1965.

The study group was as follows:

Farm Production Economics Division of the Economic Research Service:
C. W. Crickman, Washington, D. C.
Calvin C. Boykin, Davis, Calif.
Douglas D. Caton, Davis, Calif.
Grant L. Cornelius, Corvallis, Oreg.
Willis G. Kearl, Laramie, Wyo.
Robert G. Welch, University Park, N. Mex.
Richard O. Wheeler, Bozeman, Mont.

Forest Service of the U. S. Department of Agriculture:
Robert S. Rummell, Washington, D. C.
Lynn Rader, Susanville, Calif.

Bureau of Land Management of the U. S. Department of Interior:
Myrvin E. Noble, Washington, D. C.
Russell D. Lloyd, Washington, D. C.

Montana State College:
Clarence W. Jensen, Bozeman, Mont.

University of Arizona:
William E. Martin, Tucson, Ariz.

Utah State University:
N. Keith Roberts, Logan, Utah

Douglas D. Caton was the project leader. He had major responsibility for the regional analysis and preparation of this report. C. W. Crickman, Myrvin E. Noble, and Robert S. Rummell were the technical advisors. Russell D. Lloyd, Lynn Rader, and N. Keith Roberts collaborated with Mr. Caton in the preparation of an administrative report which was submitted to the Bureau of Land Management and the Forest Service in July 1962. W. Gordon Kearl and Calvin C. Boykin made special contributions in collecting and analyzing the data. All members of the study group collaborated in assembling the data and developing the budgets for the representative ranches. Myrvin E. Noble and R. S. Rummell delineated the ranching areas and defined common types of grazing permits on Federal range and seasons of use of each type of permit in each ranching area.

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Washington, D. C. September 1965

SUMMARY

In 1960, about 18 percent of the total feed used by cattle and sheep on western ranches with grazing permits was obtained from public lands. The dependency of a ranch on these lands as a source of feed varied among ranching area and locality. In general, the proportion of feed obtained from public lands varied directly with the length of the grazing period.

Budgets of costs and returns for 85 representative ranches--69 cattle and 16 sheep--were developed to determine what effects different levels of grazing fees and a 20-percent reduction in use of public lands would have on ranch incomes. The budgets of the representative ranches varied widely among both cattle and sheep ranches. The net income of about a sixth of them was $10,000 or more. On the other hand, the gross income of another sixth of the ranches did not cover their cash operating costs, depreciation, and a return for the labor of the operator and his family. Net ranch incomes generally were highest in the Intermountain, Northern Great Plains, and Northwest areas where ranches were relatively large and production rates were high.

Total costs per animal unit for operating cattle ranches were about equal in each of the ranching areas. But total unit costs were substantially lower on the larger ranches. Cash costs per animal unit were about 70 percent of total costs on the smaller cattle ranches and about 80 percent of the total on the larger ranches. Noncash costs per animal unit on large sheep ranches were lower than on smaller ranches, but total costs were higher except on those ranches having more than 650 animal units. In general, sheep ranches obtained lower rates of return on investments than cattle ranches. The regional ratio of total cost to gross income was about the same for the cattle and sheep ranches, about 84 percent.

In 1960, grazing fees were about 5 percent of cash operating expenses on the cattle and about 3 percent on the sheep ranches. If the 1960 rate of grazing fees had been increased 20 cents per animal-unit month, the average net ranch income would have been reduced $256 (from $4,361 to $4,105) on the cattle ranches. Net income of individual ranches would have been reduced $25 to $1,699 for cattle and $8 to $3,137 for sheep ranches.

Increases in grazing fees would have the greatest impact on the larger ranches and on the ranches that have yearlong grazing permits. Larger increases in grazing fees would have a proportionate effect on net ranch income. A 20-cent increase in 1960 grazing fees would have reduced the average net income of budgeted cattle ranches almost 6 percent and of sheep ranches almost 9 percent. An 80-cent increase in fees would reduce incomes 24 and 35 percent, respectively. These reductions would amount to about 95 cents per animal unit for the cattle ranches and $1.18 per animal unit for the sheep ranches for each 20-cent increment in grazing fees per animal-unit month.

The short-run effect on net ranch income of a 20-percent reduction in grazing use of public land was evaluated for 59 of the cattle ranches and for 15 of the sheep ranches. If, as assumed in this study, ranchers would have no alternative but to keep fewer animals after such a reduction, the average net income of the cattle ranches would be reduced $1,019 and the average net income of the sheep ranches, $2,113. Reduction of net ranch income of the individual cattle ranches varied from $33 to $11,850 and of the individual sheep ranches from $72 to $8,914.

Because some changes in the use of land would be associated with reductions in the permitted use, three cattle ranches could raise their income by increasing their crop sales. The amount of net income reduction on each cattle or sheep ranch would be directly related to the dependence of the ranch on Federal range grazing in each season of the grazing period. The impact was greatest on the ranches with yearlong grazing permits and on the larger ranches. The loss in net income that might be caused by reducing the size of the herd after a 20-percent reduction in the grazing permit averaged $4.15 per animal unit for the budgeted cattle ranches and $4.12 for the budgeted sheep ranches.

When a grazing privilege is reduced, a rancher loses the use of some public rangeland forage. In the short run he, as an individual rancher, may compensate for this loss by renting other range, pasture, or cropland; by buying feeds or additional land; or by reducing the size of his livestock herd. The best course of action differs among ranchers, and depends on the individual circumstances and opportunities. Obviously, a large number of ranchers could not quickly rent or buy additional land.

In this study, only the alternative of reducing the size of the herd was analyzed. It was assumed that a rancher would have to adjust to a 20-percent reduction in grazing privileges by the beginning of the next grazing season. He would do so by reducing the number of animals in his herd in the same proportion as animals are removed from Federal range, and the possible compensating adjustments in grazing and feeding as animals are removed from the livestock inventory. (In actual practice, a rancher is often given more than 1 year in which to adjust his ranching operation.) Usually, the amount of the reduction in livestock inventory would be less than the reduction in grazing privileges because for each animal removed from the inventory (sold) an equivalent amount of other feed becomes available for the remaining animals.

Thus, in the short run, the full impact of increased fees and reduced use of the range would be reflected in higher costs and reduced incomes of ranchers because they would not be able to make rapid enough adjustments in their ranching operations.

In the long run, ranch income might be supported by improved production practices which would increase the productivity of the owned and leased ranges. These production adjustments could increase the average carrying capacity of ranges and pastures. The weights and grades of the animals grazed could also be affected. Another way many ranchers might meet increased costs would be by enlarging the size of their ranching operations. The costs and returns of these various alternatives were not compared with the net income effect of a reduction in livestock inventory or the cost of increased grazing fees. However, any program of land improvement and cropping alternatives would be restricted by the soil, moisture, and topography of each ranch, by the climate of each ranching locality, and by costs involved.

If ranchers cannot regain their temporary losses in income through such measures, adjustments in the capital structure of the ranches will follow. Federal range is normally used in conjunction with private pasture, cropland, or water resources. The profit-producing capacity of the entire ranch is capitalized in the private property part of it. Eventually, if incomes continue to decline through increases in grazing fees or reductions in grazing privileges, the value of ranch property, notably land, will also decline.

EFFECTS OF CHANGES IN GRAZING FEES AND PERMITTED USE OF PUBLIC RANGELANDS ON INCOMES OF WESTERN LIVESTOCK RANCHES

INTRODUCTION

The study reported here evaluates the economic effects of alternative levels of grazing fees and grazing privileges on the organization and net income of cattle and sheep ranches that use Federal grazing lands in the Western States. The organization and financial structure of selected western livestock ranches are examined, and budgets of costs and returns for representative ranching systems are developed. The records of operation of individual ranches and of their budgets provided a basis for the analysis of interrelationships between grazing fees and grazing permits and other important factors affecting costs and returns on western ranches.

In view of their statutory responsibilities for management of public rangelands and recent statements of public policy, the Bureau of Land Management and the Forest Service need research evaluations of the impact of changes in grazing fees and grazing privileges on ranch organization and income. These agencies and ranchers need reliable information on how the use of Federal rangeland complements the organization and operation of western cattle and sheep ranches, and how administrative changes in use of Federal range are likely to affect the operations and the net incomes of ranchers.

Importance of Public Grazing Land

Many livestock ranchers in the West depend on public grazing land. The Bureau of Land Management and the Forest Service have the authority to permit livestock grazing on the lands under their jurisdiction and to charge ranchers a fee for this grazing right. For the 1960 grazing season, western ranchers paid the Bureau of Land Management for 16, 953 grazing permits and 9, 848 grazing leases and the Forest Service for 16, 483 permits. Under these permits and leases, ranchers paid to graze 4.4 million head of cattle and 9.9 million head of sheep on 179 million acres of Federal land administered by the Bureau of Land Management and an estimated 91 million acres in the National Forests. In addition, several million head of calves and lambs under 6 months of age were grazed free. The number of ranchers who had paid for grazing permits is somewhat less than the number of permits issued because many ranchers obtained permits from both agencies.

In 1960, Federal rangelands provided 24 million animal-unit months of feed. This was about 18 percent of the total feed units used by cattle and sheep on ranches with grazing permits. The relative importance of Federal range as a source of feed varies considerably among ranching areas and localities. In general, the proportion of feed obtained from public lands varies directly with the duration of the grazing period and with the proportion of the total herd grazed on Federal range. For example, a ranch using National Forest ranges for 3 months or less obtained 22 percent of its feed from public land; another ranch using Bureau of Land Management rangelands for 6 months during spring, summer, and fall obtained 50 percent of its feed from public land; and ranches with yearlong grazing permits obtained 80 to 90 percent of the year's feed from publicly owned ranges. In addition to such variations in use of public range the quantity of feed obtained from Federal rangelands differs considerably among individual ranches. There are many reasons for this. Some ranches have more cropland and meadow pasture than others; some own considerable rangeland; and others lease ranges and pastures from private owners or non-Federal public land agencies.

Conditions of Use of Federal Rangelands

The Forest Service administers the grazing on the National Forests. This is done under regulations promulgated by the Secretary of Agriculture based on the Act of June 4, 1897, and other related legislation. The Bureau of Land Management administers the grazing on other Federal lands as provided by the Taylor Grazing Act of 1934. Broad objectives in the administration and management of grazing are: (1) Conservation and improvement of the Federal rangelands to provide maximum sustained levels of livestock grazing consistent with other resource uses; and (2) the allocation of grazing use to livestock producers under conditions which will lend economic stability to ranching operations and surrounding local communities.

Grazing on the public lands is allocated to ranch operators on the basis of certain qualifications. These include prior use of the public lands before they were established as National Forests or Grazing Districts; needs for additional forage to round out a yearlong ranching operation; and ownership or control of sufficient base ranch property to provide forage and feed for animals during the time they are not grazed on Federal lands. A primary consideration is to obtain physically well-balanced livestock units through the combined use of public and privately owned grazing lands.

Ranch operators who qualify are issued grazing permits by the Bureau of Land Mangement or the Forest Service for a term of 10 years with provision for renewal. Both agencies provide for transfer of permits with base property. A permit by the Forest Service may be exchanged with the sale of permitted livestock if the prospective permittee owns suitable base property and is otherwise qualified. The permit specifies the number of animals to be grazed on public lands along with the season of use. It is validated annually by paying a grazing fee. The amount of grazing may be adjusted by the Federal agencies to the estimated sustained grazing capacity of the range. Permitted use may be adjusted by reducing the number of animals allowed on the range or by shortening the grazing season.

A charge for grazing was instituted on the National Forests in 1905 and on Federal lands administered by the Bureau of Land Management in 1936. The two agencies calculate their fees somewhat differently. The Forest Service uses a base fee derived from an early study of lease rates on private grazing lands. Base fees were established for local range allotments after considering the grazing capacity, quality of forage, location, and other factors. Consequently, there are several hundred different fee bases for either cattle or sheep. Each of these is adjusted annually to reflect the previous year's average cattle or lamb prices in the Western States.

The regular annual grazing fees charged by the Bureau of Land Management are based on the average of cattle and lamb prices in the Western States for the previous year. Under this formula, fees per animal-unit month of grazing are the same on all Grazing Districts. Bureau of Land Management fees per animal-unit month in 1960 were equal to the simple average of the previous year's prices for cattle and lambs. Subsequently, the fee formula has been changed so that the average price for cattle and lambs is multiplied by a factor of 1.5.

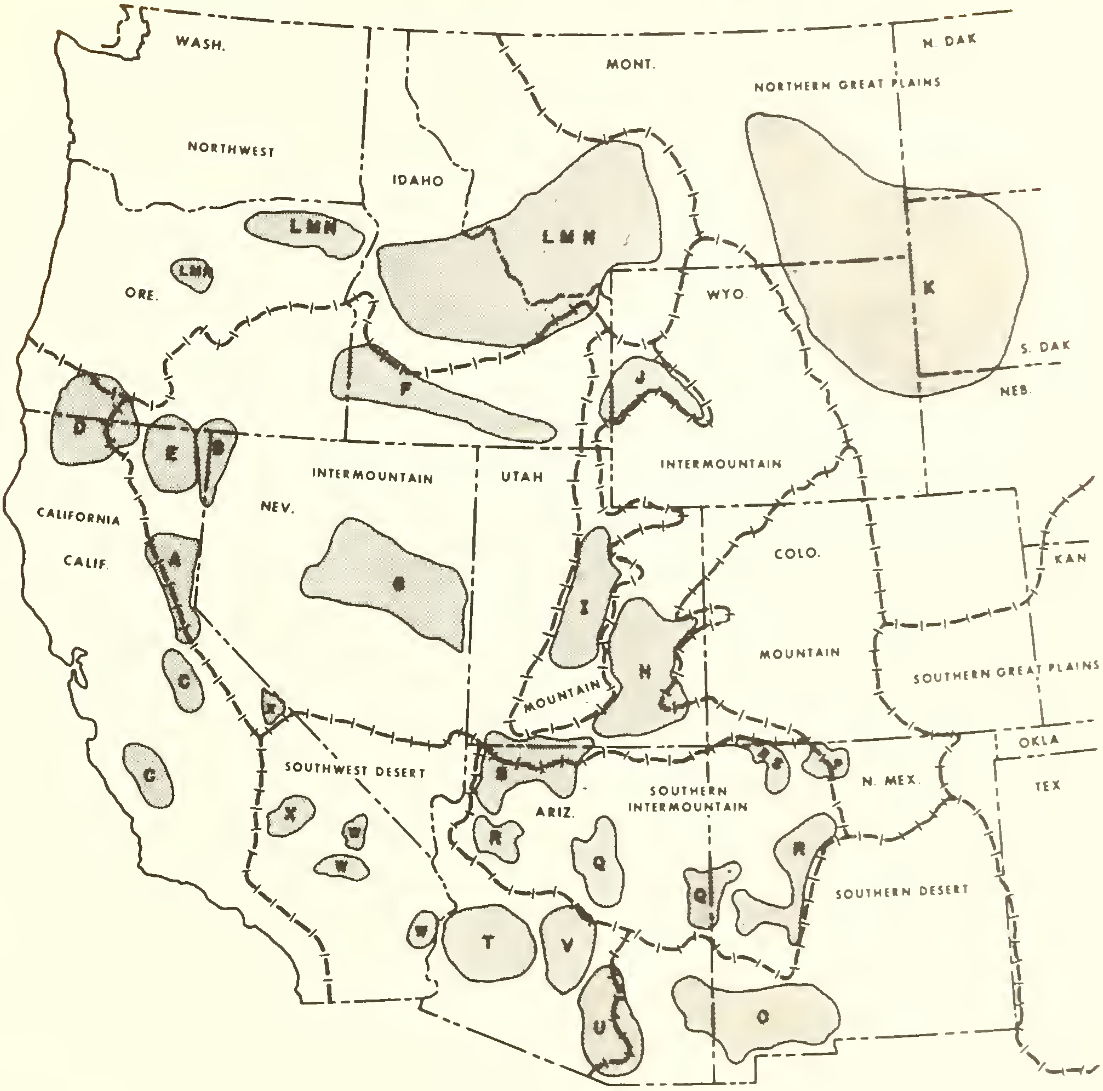
METHOD OF STUDY

Sampling Procedures

The western rangeland region was divided into eight ranching areas: Northern Great Plains, Northwest, California, Intermountain, Mountain, Southern Intermountain, Southern Desert, and Southwest Desert (figs. 1 and 2). These areas were differentiated on the basis of similarities in native vegetation, climate, and systems of range-livestock production. Within each ranching area the most common types of ranches were selected for study. Ranch types were classified by the following criteria:

(a) Kind of livestock raised--cattle or sheep.

RANCHING AREAS OF THE WEST AND GENERAL LOCATION OF CATTLE RANCHES STUDIED



LEGEND: —|—|— Boundary between ranching areas ——— General location of ranches studied

CATTLE RANCH TYPES:

A=(BLM-O) (FS-S)
B=(BLM-S) (FS-O)
C=(BLM-Sp,S) (FS-O)
D=(BLM-Sp,S,F) (FS-O)
E=(BLM-Sp,F) (FS-S)
F=(BLM-Sp,S,F) (FS-O)
G=(BLM-Sp,S,F,W) (FS-O)
H=(BLM-F,W,Sp) (FS-S)
I=(BLM-O) (FS-S)
J=(BLM-Sp,F) (FS-S)
K=(BLM-Y) (FS-O)
L=(BLM-O) (FS-S)
M=(BLM-Sp,F) (FS-O)
N=(BLM-Sp,F) (FS-S)
O=(BLM-Y) (FS-O)
P=(BLM-O) (FS-S)
Q=(BLM-O) (FS-Y)
R=(BLM-Y) (FS-O)
S=(BLM-F,W,Sp) (FS-S)
T=(BLM-Y) (FS-O)
U=(BLM-Y) (FS-O)
V=(BLM-F,W,Sp) (FS-O)
W=(BLM-W) (FS-O)
X=(BLM-W,Sp,S) (FS-O)

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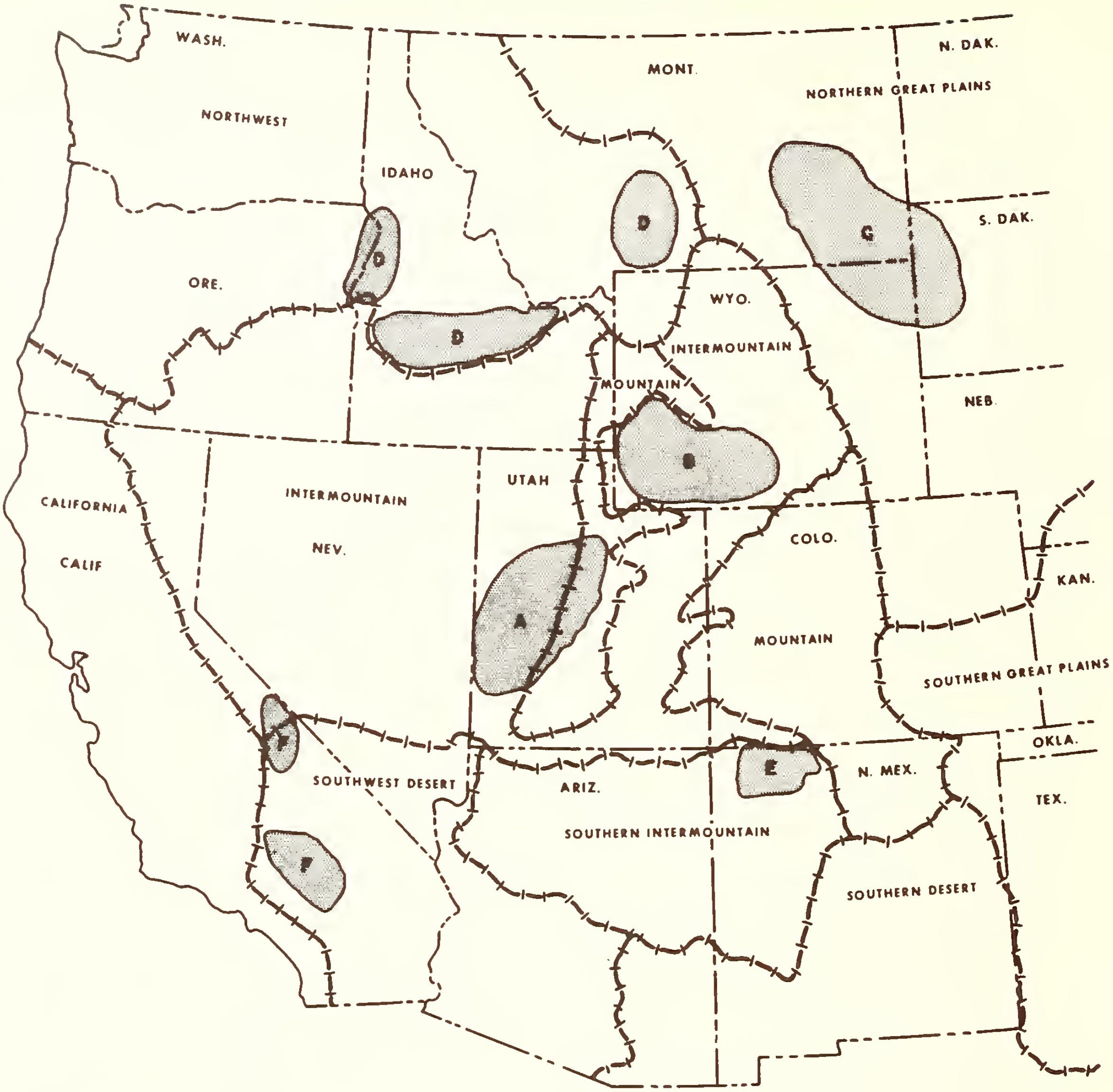
Figure 1

RANCHING AREAS OF THE WEST AND GENERAL LOCATION OF SHEEP RANCHES STUDIED



SHEEP RANCH TYPES:
A=(BLM-F,W,Sp) (FS-S)
B=(BLM-F,W,Sp) (FS-S)
C=(BLM-Y) (FS-O)
D=(BLM-Sp,F) (FS-S)
E=(BLM-Y) (FS-0)
F=(BLM-Sp) (FS-O)

LEGEND:
—|—|— Boundary between ranching areas.
——— General location of ranches studied

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Figure 2

(b) Kind of permit on public ranges--Forest Service permit only, Bureau of Land Management permit only, or both.

(c) Pattern of seasonal use of Federal rangelands--spring, summer, fall, winter, various seasonal combinations, or yearlong.

(d) For ranches using Bureau of Land Management ranges, a distinction was made between ranges in organized grazing districts and those outside these districts (Section 15 lands).

Data used for classifying and identifying types of ranches were obtained from the files on grazing leases of all Bureau of Land Management grazing districts and representative National Forests. Twenty-seven types of ranches with from one to six sizes each, or a total of 85 types and sizes were chosen.[1] Table 1 lists the types and sizes of ranches studied.

Data for selecting the 85 representative ranches were obtained from about 700 ranchers by personal interview and from other available sources. The ranchers interviewed were selected at random from Bureau of Land Management and Forest Service lists of permittees grouped by the types and sizes selected for study. These ranchers furnished data on livestock inventories, production, sales, and management practices; land resources used; seasonal patterns of use, yields, and carrying capacities; labor used; investments in land and improvements, livestock, and machinery and equipment; and ranch operating expenses. Data collected from ranchers were supplemented by information from other research projects and from Bureau of Land Management and Forest Service files and records.

Procedures and Assumptions Used in Ranch Budgets

Ranch budgets were used to estimate the income for each of the 85 representative ranches, the factors affecting costs and returns and the interrelationships among the factors, and the effects of different levels of grazing fees and a 20-percent reduction in grazing privileges. Starting from 20 cents per AUM (animal-unit month) and 60 cents per AUM to represent the approximate 1961-62 fee levels for Bureau of Land Management and Forest Service ranges, the cost and income effects of successive increments in grazing fees of 20 cents per AUM from 1961-62 levels to levels of $1.00 for Bureau of Land Management and $1.40 for the Forest Service were calculated. It was assumed for this study that the Bureau of Land Management and Forest Service fees would increase simultaneously at a constant differential of 40 cents per AUM. In analyzing the effect of a reduction in grazing privileges, it was assumed that the permitted number of livestock would be reduced 20 percent at the beginning of the next grazing season.

Each of the 85 representative ranches was budgeted as an owner-operated business. The ranch resources--land, buildings, equipment, fences, stock water, and grazing permits--and production and marketing practices used for each ranching situation budgeted were the typical patterns reported in the survey. Enterprises other than range livestock and livestock feed were included in the budgets if they were reported by 50 percent or more of the group of ranches represented. The capacity of ranch resources, including grazing permits, was assumed to be fully utilized currently and under the alternative conditions of a reduction in the grazing permit.

The inventory value of each ranch was budgeted at the estimated 1960 market value, which included whatever capitalized value the market imputed to grazing permits. The value of land was derived by subtracting the value of other property. Buildings and equipment values were straight-line depreciated 1960 replacement costs. Livestock inventory values were based on projected market prices. The family home was not included in total ranch investment, and depreciation and repair costs on it were excluded from ranch expenses. Only the estimated ranch business share of telephone, utility, and automobile costs were included in the budgets.

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[1] Definition of size of ranch is on page 7.

Area, type of ranch, and grazing pattern 1/	Number of sizes 2/	Type of BLM permit 3/
California		
Cattle:		
(BLM-0)(FS-S)	4	None.
(BLM-Sp,S)(FS-0)	2	Section 15.
(BLM-Sp,S,F)(FS-0)	2	Section 15.
(BLM-Sp,S,F)(FS-S)	1	Section 15.
Intermountain		
Cattle:		
(BLM-S)(FS-0)*	4	Section 3.
(BLM-Sp,F)(FS-S)*	3	Section 3.
(BLM-Sp,S,F)(FS-0)	3	Section 3.
(BLM-Sp,S,F,W)(FS-0)	3	Section 3.
(BLM-F,W,Sp)(FS-S)	3	Section 3.
(BLM-S)(FS-S)*	1	Section 3.
Sheep:		
(BLM-F,W,Sp)(FS-S)	2	Section 3.
(BLM-F,W,Sp)(FS-S)	6	Section 3.
Mountain		
Cattle:		
(BLM-0)(FS-S)	2	None.
(BLM-Sp,F)(FS-S)	3	Section 3.
Northern Great Plains		
Cattle:		
(BLM-Y)(FS-0)	3	Section 3.
Sheep:		
(BLM-Y)(FS-0)	2	Section 3.
Northwest		
Cattle:		
(BLM-0)(FS-S)	3	None.
(BLM-Sp,F)(FS-0)	3	Section 3.
(BLM-Sp,F)(FS-S)	3	Section 3.
Sheep:		
(BLM-Sp,F)(FS-S)	2	Section 3.
Southern Desert		
Cattle:		
(BLM-Y)(FS-0)	3	Section 3.
Southern Intermountain		
Cattle:		
(BLM-0)(FS-S)	2	None.
(BLM-0)(FS-Y)	3	None.
(BLM-Y)(FS-0)	3	Section 3.
(BLM-F,W,Sp)(FS-S)	3	Section 3.
Sheep:		
(BLM-Y)(FS-0)	2	Section 3.
Southwest Desert		
Cattle:		
(BLM-Y)(FS-0)	4	Section 3.
(BLM-Y)(FS-0)	4	Section 15.
(BLM-F,W,Sp)(FS-0)	1	Section 3.
(BLM-W,Sp,S)(FS-S)*	1	Section 3.
(BLM-W)(FS-0)*	2	Section 3 and 15.
Sheep:		
(BLM-Sp)(FS-0)*	2	Section 15.

1/ BLM = Bureau of Land Management; FS = Forest Service; Sp = spring; S = summer; F = fall; W = winter; Y = yearlong; 0 = none.

2/ Size of ranch is equal to the average number of equivalent livestock feed-consuming units on ranch.

3/ Section 3 = privileges on lands in organized grazing districts. Section 15 = lands outside organized grazing districts.

*These types are in or partly in California (figs. 1 and 2).

The amount of labor used on the ranch was estimated as the typical situation reported in the survey. Hired labor was valued at local rates reported for 1960. Operators' labor was valued at the rate of a full-time hired man. Family labor was valued at equivalent hired labor rates. For the small ranches on which operator labor requirements were less than full time, the operators' wage was adjusted accordingly.

The projected U.S. prices used in the budgets were developed by the Farm Production Economics Division, U.S. Department of Agriculture, for use in this and other research studies. Comparable projected prices were developed for the Omaha livestock market for cattle and the Ogden livestock market for sheep (table 2). From these two price bases, the price projections were adjusted to ranching areas. This was done by relating the projected prices to the ratio of 1953-60 average prices on the base market to the prices for the same period at a centrally located market in each ranching area. The prices were then adjusted to each locality within each area by subtracting out an allowance for marketing and transporting. Seasonal prices were determined by relating the 1953-60 average prices for each month to the 1953-60 average annual price. The marketing practices and time of marketing used for each type of ranch included in the study were the typical patterns found. In addition to the estimates of gross receipts based on projected prices, the 1953-60 average prices for each locality were used to show the effect price changes have on net ranch income. These gross income comparisons were made for each of the ranches in California and Southern Intermountain ranching areas and for a few of the Intermountain ranches. Production expenses were based on local 1960 prices for materials, services, taxes, and insurance. Interest on operating capital was charged at the annual rate of 6 percent for an average time of 6 months.

REPRESENTATIVE CATTLE AND SHEEP RANCHES

The budgets of the 85 representative cattle and sheep ranches varied widely among both cattle and sheep ranches in investment and costs and returns. The net ranch incomes of about a sixth of the budgeted ranches were $10,000 or more. On the other hand, the gross incomes of another sixth of the ranches did not cover the costs of operation. Some highlights of the economic status of a cross section of the range livestock industry are discussed here. More details on production, investment, and costs and returns are summarized in budgets for each of the 69 cattle and 16 sheep ranches in tables 18 and 19.

Size of each budgeted ranch is equal to the average number of equivalent livestock feed-consuming units on the ranch. That is, ranch size was determined by converting the number of head of sheep or cattle and other livestock of each representative ranch to feed-unit equivalents starting with the January 1 livestock inventory and continuing to December 31, summing the feed requirement totals for each month, and dividing this total by 12.[2] Each budgeted ranch is not an actual ranch. It is a composite of the land, livestock, grazing permit, and organizational features of ranches of that size and type in the ranching area. Land, livestock, investment, and ranch organization of the budgeted sheep and cattle ranches were determined on a modal ranch basis for each type of grazing permit in each ranching locality sampled.

Ranch Investment

The capital investment at 1960 market prices in land, buildings, equipment, and livestock on the representative ranches ranged from about $15,000 on a 28 animal-unit Southern

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[2] In determining total and seasonal feed requirements, the following standards of animal-unit equivalents were adopted: Mature cow, 1.0; long yearling, 0.8; weaned calf, 0.6; unweaned calf, 0.4; pregnant heifer, 1.0; bull, 1.25; 5 mature sheep, 1.0; and a mature horse, 1.5. These animal-unit standards were based on feeding standards. The animal-unit weights were modified in a ranching area when sample data and secondary data indicated a difference existed from the standard.

Table 2.--Prices per hundredweight for cattle and sheep, by grades, at Omaha, Nebr., and Ogden, Utah, average 1953-60, 1960, and projected 1/

Kind, weight, and grade of livestock	1953-60 average	1960	Projected 2/
	Dollars	Dollars	Dollars
Omaha Market			
Cows, all weights:			
Commercial	15.08	16.43	14.50
Utility	13.64	15.31	13.00
Bulls, all weights:			
Utility	15.60	18.18	14.80
Feeders and stockers:			
Steers, 500 to 800 pounds:			
Choice	24.04	26.61	23.00
Good	21.34	23.99	20.50
Heifers, 500 to 700 pounds:			
Choice	21.23	24.16	20.25
Medium and Good	17.78	20.76	16.80
Good and Choice calves, 300 to 500 pounds:			
Steers	25.19	28.41	24.00
Heifers	22.07	25.71	21.00
Ogden Market			
Spring lambs, Good and Choice	20.38	21.25	22.23
Lambs, Good and Choice 3/	18.55	18.25	19.34
Feeder lambs, Good and Choice	17.46	17.00	17.95
Ewes, Cull and Utility	3.77	3.75	4.15

1/ Simple average of monthly prices.

2/ The projected prices at Omaha were adjusted to each ranching locality by multiplying the projected prices by the ratio of the 1953-60 prices at a centrally located market in the region, i.e., Stockton, Calif., to the 1953-60 average Omaha prices.

3/ Includes average price of spring lambs May through September.

Intermountain sheep ranch to more than $1 million on a 1,495 animal-unit Southwest Desert cattle ranch (tables 18 and 19). About 40 percent of the 69 cattle ranches and about 56 percent of the 16 sheep ranches had a total investment of $150,000 or more (table 3). On cattle ranches, land represented about half, buildings and equipment about a fourth, and livestock about a fourth of the total investment. On sheep ranches, the investment in land was a slightly larger proportion and the investment in buildings and equipment was a slightly smaller proportion of the total.

Current investments in cattle and sheep ranching are high. We assumed that the 1960 market value of the property represented the investment in the business upon which a return should be earned that is comparable to alternative business opportunities. The budgets of costs and returns in ranching (that are discussed later in this report) show that on most of the ranches cash income exceeded cash expenses. These budgets also show, however, that income from ranching is less than that from other businesses if each production resource other than management is charged for at the current prices.

Some ranchers have lower investment costs than was assumed in this study because they bought or inherited property before recent increases in land values. They apparently remain in ranching by sacrificing an opportunity to sell their land and to invest the money where returns are higher. Another possibility is that all returns were not accounted for in this analysis. Ranching is not just a business of producing livestock. Ranchers as landowners are also investors expecting capital gains. Where land is held for appreciation, some of the rancher's investment costs might be properly charged against holding the land for speculation.

The average investment per animal unit was about $575 on the budgeted cattle and about $415 on the budgeted sheep ranches. Investment per animal unit was higher on small than on large ranches. It was progressively and substantially smaller for ranches up to about 250 animal units. Among larger cattle ranches, investment per animal unit decreased further but at a lesser rate. The average rate of decrease in investment on cattle ranches having between 50 and 250 animal units was about 95 cents per animal unit. Above 250 animal units, the average rate of decrease was about 14 cents per animal unit. For a 50 animal-unit cattle ranch, the average investment per animal unit was $710; for a 250 animal-unit ranch, $520; and for a 600 animal-unit ranch, $471.

The investment per animal unit on sheep ranches differed from that of cattle ranches in two respects. The rate of decrease from small to large sheep ranches was less and the size of ranch at which the decrease in rate leveled off was larger--about 660 compared with 250 animal units on cattle ranches. The average rate of decrease in investment on sheep ranches which had fewer than 660 animal units was about 39 cents. Above 660 animal units, it was only about 5 cents less for each additional animal unit. The average investment of a 230 animal-unit sheep ranch was $570; of a 660 animal-unit ranch, $400; and of a 1,700 animal-unit ranch, $355.

Ranches in the mountain areas and in northern States need a substantial acreage of cropland, especially hayland, in the base property to produce winter feed. These ranches also have a larger investment in buildings and equipment than those in the southern ranching areas. However, the southern ranches require more land per animal unit because of the lower productivity of the range and yearlong grazing. Consequently, total investment per animal unit for similar types and sizes of cattle and sheep ranches is about the same in each of the eight ranching areas.

Costs and Returns on Cattle Ranches

Production Costs

Total costs per animal unit for operating cattle ranches of the same size were about equal in each of the eight ranching areas. But total unit costs were substantially lower on the larger ranches (table 4). Cash costs per animal unit were about 70 percent of total costs on the smaller ranches and about 80 percent of the total on the larger ranches. The larger ranches save particularly on depreciation per animal unit. Generally, the buildings, machinery, and equipment needed for a 250-400 animal-unit ranch is also adequate for even larger ranches.

Table 3.--Number of representative sheep and cattle ranches in each of 10 selected total ranch investment size categories, by ranching area, Western Region, 1960

Ranching area	Total ranch investment (1,000 dollars)									
	Less than 50	50-99	100-149	150-199	200-299	300-399	400-499	500-699	700-1,000	Over 1,000
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Cattle Ranches										
California	0	4	2	2	1	0	0	0	0	0
Intermountain	2	3	3	2	4	2	0	0	1	0
Mountain	0	2	1	1	1	0	0	0	0	0
Northern Great Plains	1	0	1	0	0	1	0	0	0	0
Northwest	1	2	3	0	2	1	0	0	0	0
Southern Desert	1	1	1	0	0	0	0	0	0	0
Southern Intermountain	4	3	3	0	1	0	0	0	0	0
Southwest Desert	0	2	1	2	2	1	1	1	0	2
Total	9	17	15	7	11	5	1	1	1	2
Sheep Ranches										
Intermountain	0	0	1	1	1	2	0	2	1	0
Northern Great Plains	0	0	1	0	1	0	0	0	0	0
Northwest	0	0	1	0	1	0	0	0	0	0
Southern Intermountain	2	0	0	0	0	0	0	0	0	0
Southwest Desert	1	0	1	0	0	0	0	0	0	0
Total	3	0	4	1	3	2	0	2	1	0

Table 4.--Costs per animal unit on 69 representative cattle ranches, by size of ranch, Western Region, 1960

Size of ranch in animal units	Costs per animal unit		
	Cash	Noncash 1/	Total
	Dollars	Dollars	Dollars
Less than 151	42.00	18.50	60.50
151 to 250	32.27	11.73	44.00
251 to 450	31.24	11.76	43.00
451 to 650	32.44	9.56	42.00
651 and over	27.00	5.50	32.50

1/ Depreciation on buildings, equipment, and purchased livestock and death loss of purchased livestock.

Cash costs per pound of beef cattle produced were not so directly related to size of ranch as were costs per animal unit (table 5). The cattle ranches with the lowest cost per pound were about evenly divided between small, medium, and large ranches. But increasing cash costs per pound of beef cattle produced were directly associated with ranches in successively smaller sized classes. The relatively high costs per animal unit was offset by relatively high production per animal unit on some of the small ranches.

Table 5.--Number of cattle ranches with specified cash costs per pound of beef cattle production, by size of ranch, Western Region, 1960 1/

Size of ranch in animal units	Number of ranches having costs per pound of--					
	8-10 cents	10.1-12 cents	12.1-14 cents	14.1-16 cents	16.1-18 cents	18.1-20 cents
	Number	Number	Number	Number	Number	Number
Less than 200	8	3	6	9	2	1
200 to 399	6	7	2	3	---	---
400 to 599	7	4	2	---	---	---
600 and over	5	3	---	---	---	---

1/ Excludes a 1,495 stocker-feeder cattle ranch in the Southwest Desert.

Cash costs per pound were lowest in the Northwest area at 10.1 cents per pound and highest in the California area at 13.3 cents per pound. Cash costs were 84 percent and noncash costs 16 percent of total costs. Total costs averaged 83.6 percent of the gross ranch income.

Net Ranch Income 3/

Net ranch incomes were between $2,000 and $6,000 on about 40 percent of the budgeted cattle ranches (table 6). Two cattle ranches--a 1,960 animal-unit Intermountain ranch and a

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3/ Gross income less cash costs, depreciation, and death loss of purchased livestock.

Table 6.--Number of representative cattle ranches in selected net ranch income categories, by ranching area, Western Region, 1960

Ranching area	Number of cattle ranches with--											
	Negative income			Positive income								
	Over $1,000	$500-$1,000	Less than $500	Less than $500	$500-$999	$1,000-$1,999	$2,000-$3,999	$4,000-$5,999	$6,000-$9,999	$10,000-$14,999	$15,000-$20,000	Over $20,000
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
California------	1	1	1	2	1	0	1	2	0	0	0	0
Intermountain---	1	1	2	0	0	3	2	3	0	3	1	1
Mountain--------	0	0	0	1	1	0	1	1	1	0	0	0
Northern Great Plains--------	0	0	0	0	0	0	1	1	0	1	0	0
Northwest-------	0	0	0	1	0	0	2	3	1	2	0	0
Southern Desert--------	1	0	0	0	0	1	1	0	0	0	0	0
Southern Intermountain-	1	1	1	1	1	0	4	0	2	0	0	0
Southwest Desert--------	0	0	1	0	0	1	3	2	2	1	1	1
Total------	4	3	5	5	3	5	15	12	6	7	2	2

1, 495 animal-unit Southwest Desert ranch--had net incomes of more than $20, 000. Incomes generally were highest in the Intermountain and the Northern Great Plains areas. The net incomes of ranches in those areas averaged $6, 127 and $6, 841 per ranch, respectively. Larger than average size of ranches and higher than average production rates were the main reasons for the higher incomes in those areas. The average net incomes in the Northwest and the Southwest Desert areas were almost as high. Incomes were lowest in the California area ($1, 216) and the Southern Desert area ($1, 237).

Twelve cattle ranches had negative ranch incomes. These ranches averaged 84 animal units per ranch with a range in size from 34 to 177 animal units. Three of these ranches are in California, 4 in the Intermountain, 3 in the Southern Intermountain, and 2 in the Southern Desert area. Eight ranches had negative incomes less than $1, 000, and 4 had negative incomes more than $1, 000.

When the ranches were grouped by size, those with 150 animal units and less had an average net ranch income of $430; those with 151 to 400 animal units, $3, 010; those with 401 to 650 animal units, $7, 469; and those with more than 650 animal units, $14, 360.

The above net ranch incomes were budgeted at 1960 costs and with the locally adjusted projected livestock prices shown in table 2. To show the effects of changes in the prices for beef cattle, 34 representative cattle ranches in the California, Intermountain, and Southern Intermountain areas were also budgeted with the average prices in 1953-60, which were somewhat higher than the projected prices (table 7). The higher prices per pound for various classes and grades of cattle increased gross income of the selected cattle ranches by about 4 percent, which is about the same as the percentage increase in price. However, the percentage increase in gross ranch income was generally more on large than small cattle ranches because of greater total production and, consequently, the greater total weight sold. The larger ranches generally sold proportionately more yearlings than calves.

Return on Investment

The average rate of return on investment on the 69 cattle ranches was 2 percent. It varied from -4.2 to 6.9 percent. About half the ranches earned between 1 and 3 percent (table 8). About 17 percent earned over 4 percent. Another 17 percent had negative returns on investment. All ranches with negative returns had less than 200 animal units. As many small as large ranches earned a return over 4 percent.

Costs and Returns on Sheep Ranches

Production Costs

Cash costs per animal unit on budgeted sheep ranches did not decrease as size of ranch increased as they did on cattle ranches. Reason for this was that variations in system of ranching, such as shed lambing and winter range operations, were more important than size of ranch in affecting cash costs (tables 9 and 10). Noncash costs per animal unit, however, were lower on the large ranches. But these costs were not low enough to keep total costs from trending upward with size of ranch, except for ranches having more than 650 animal units.

The large sheep ranches had high costs per animal unit for several reasons. In the Intermountain area where sheep ranches are large, the rate of feeding is relatively high, the length of the feeding period is relatively long, and hired labor costs are high. Although the large ranches in the Southwest Desert have limited acreages of owned land and ranch headquarters and equipment are not comparable to those on the northern sheep ranches, their cash costs are high because of high labor, feed, and land rental costs. The small ranches in the Southern Intermountain area require little hired labor and use less purchased feed and pasture.

Table 7.--Average annual prices, 1953-60, and projected prices per hundredweight for cattle, Stockton, Calif., and Omaha, Nebr. 1/

Livestock class, grade, and weight	Omaha prices		Stockton prices	
	Average 1953-60	Projected	Average 1953-60	Projected
	Dollars	Dollars	Dollars	Dollars
Cows, all weights:				
Commercial	15.08	14.50	15.87	15.26
Utility	13.64	13.00	14.38	13.70
Bulls, all weights:				
Utility	15.60	14.80	16.42	16.15
Feeders and stockers:				
Steers, 500 to 800 pounds:				
Choice	24.04	23.00	22.62	21.64
Good	21.34	20.50	20.99	20.16
Heifers, 500 to 700 pounds:				
Choice	21.23	20.25	19.96	19.04
Medium and Good	17.78	16.80	18.33	17.86
Good and Choice calves, 300 to 500 pounds:				
Steers	25.19	24.00	23.05	21.96
Heifers	22.07	21.00	20.79	19.78

1/ This table illustrates the area adjustment of the Omaha projected prices and the use of the 1953-60 local central market average prices.

Table 8.--Number of representative cattle ranches having selected rates of return on investment categories, by size of ranch, Western Region, 1960

Size of ranch in animal units	Ranches with returns that were--						
	Negative	Less than 1 percent	1-2 percent	2-3 percent	3-4 percent	4-5 percent	Over 5 percent
	Number	Number	Number	Number	Number	Number	Number
Less than 100	9	1	1	0	0	1	3
100 to 199	3	2	3	3	1	1	1
200 to 299	0	1	4	7	0	1	0
300 to 399	0	1	0	1	2	0	0
400 to 499	0	0	4	3	0	1	0
500 to 599	0	0	0	2	3	0	1
600 to 799	0	1	2	0	1	0	1
800 to 999	0	0	0	0	0	0	1
1,000 to 1,499	0	0	1	0	0	0	0
1,500 to 1,999	0	0	0	1	0	1	0
Total	12	6	15	17	7	5	7

Table 9.--Costs per animal unit on 16 representative sheep ranches, by size of ranch, Western Region, 1960

Size of ranch in animal units	Cash costs	Noncash costs 1/	Total costs
	Dollars	Dollars	Dollars
Less than 150	35.80	17.80	53.60
151 to 250	49.00	16.00	65.00
251 to 400	52.85	13.50	66.40
401 to 650	53.65	15.90	69.55
651 and over	50.75	7.40	58.20

1/ Depreciation on buildings, equipment, and purchased livestock plus death loss of purchased livestock.

Table 10.--Number of sheep ranches having specified cash costs per pound of meat and wool production, by size of ranch, Western Region, 1960

Size of ranch in animal units	Ranches with cash costs--						
	8-10 cents	10.1-12 cents	12.1-14 cents	14.1-16 cents	16.1-18 cents	18.1-20 cents	Over 20 cents
	No.	No.	No.	No.	No.	No.	No.
Less than 200	1	1	0	0	0	0	0
200 to 399	0	1	2	2	0	0	0
400 to 599	0	1	1	1	0	0	0
600 and over	0	0	0	2	1	2	1

Cash costs per pound were lowest in the Southern Intermountain area, at 11.5 cents per pound, and highest in the Southwest Desert area, at 18.9 cents per pound. Cash costs are 85 percent and noncash costs 15 percent of total costs. Total costs averaged 84.4 percent of gross sales for the 16 sheep ranches budgeted.

Net Ranch Income 4/

The distribution of the 16 budgeted sheep ranches by net ranch income intervals is shown in table 11. About 40 percent of the ranches were in the $6,000 to $10,000 income interval. Two large ranches in the Intermountain area had net ranch incomes of more than $20,000 (table 19).

Ranches in the Intermountain, Northwest, and Northern Great Plains areas had the highest average net incomes per ranch--$11,420, $6,399, and $5,542, respectively. The sheep ranches in the Southern Intermountain area averaged net incomes of $80 and those in the Southwest

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4/ Gross income less cash costs, depreciation, and death loss of purchased livestock.

Table 11.--Number of representative sheep ranches in selected ranch income categories, by ranching area, Western Region, 1960

Ranching area	Negative incomes of less than $500	Positive incomes of-- Less than $1,000	$1,000-$1,999	$2,000-$3,999	$4,000-$5,999	$6,000-$9,999	$10,000-$20,000	Over $20,000
	Number	Number	Number	Number	Number	Number	Number	Number
Intermountain-	0	0	0	1	1	3	1	2
Northern Great Plains------	0	0	0	1	0	1	0	0
Northwest-----	0	0	0	0	0	2	0	0
Southern Intermountain-------	1	1	0	0	0	0	0	0
Southwest Desert------	0	1	1	0	0	0	0	0
Total----	1	2	1	2	1	6	1	2

Desert area $762. The high average net income of the Intermountain area was primarily due to the large size of the ranches. Those in the Northwest and Northern Great Plains had relatively high rates of production per animal unit. The low ranch income of the Southern Intermountain sheep ranches was due to both small sizes of ranches and low production rates. For example, wool production per animal unit on these ranches was about 30 pounds compared with 50 pounds on the Intermountain area ranches. The Southwest Desert sheep ranches were large; they had the highest rates of production per animal unit, but high cash costs caused total production costs to be the highest of the sheep ranches budgeted.

Return on Investment

The rate of return on investment on the sheep ranches varied from -4.0 to 4.5 percent. The average rate of return on investment was 2.6 percent. Two ranches earned between 2 and 3 percent, four between 1 and 2 percent, and two between 4 and 5 percent. A 73 animal-unit ranch in the Southern Intermountain area had a negative return (table 12). A ranch in the Northwest area with 220 animal units had the highest rate of return.

In general, sheep ranches obtained lower rates of return on investment than cattle ranches. None of the budgeted sheep ranches obtained more than a 5-percent return, whereas 7 budgeted cattle ranches had a return of more than 5 percent.

SHORT-RUN EFFECTS OF INCREASES IN GRAZING FEES

Grazing fees are a direct operating cost of running a ranch the same as cash paid as rent for leased land or for purchased feed. In the short run, an increase in grazing fees would be fully reflected in higher total operating costs of a ranch because no significant changes would be made quickly in the management or financial structure of the ranch as an adjustment to the higher costs.

Table 12.--Number of sheep ranches with selected rates of return on investment, by size of ranch, 16 representative western sheep ranches, 1960

Size of ranch in animal units	Negative	Less than 1 percent	1.0-1.9 percent	2.0-2.9 percent	3.0-3.9 percent	4.0-5.0 percent
	Number	Number	Number	Number	Number	Number
Less than 200-------	1	0	1	0	0	0
200 to 399----------	0	0	1	1	1	2
400 to 799----------	0	0	0	1	3	0
800 to 999----------	0	0	0	0	1	0
1,000 to 1,499------	0	1	0	0	0	0
1,500 to 1,999------	0	0	1	0	1	0
2,000 and over------	0	0	1	0	0	0
Total----------	1	1	4	2	6	2

Any change in the amount of cash operating costs of a ranch which would accompany an increase in grazing fees would differ among ranches according to the number and length of time the operator's livestock were grazed on the Federal ranges.

In 1960, grazing fees on Bureau of Land Management ranges were about 20 cents per animal-unit month and on Forest Service ranges about 60 cents. These fees constituted 4.68 percent of the cash operating costs on cattle ranches and 2.93 percent on sheep ranches. Grazing fees are a smaller percentage of total cash costs on sheep than on cattle ranches because these costs are higher on the sheep ranches. Another reason for the smaller figure is that sheep ranchers use the Bureau of Land Management ranges which have lower fees. In 1960, the relation between grazing fees and total cash costs among budgeted ranches varied considerably. The percentages ranged from 1 to 20 percent on cattle ranches and from less than 1 percent to about 5 percent on sheep ranches.

The effect of progressively greater increases in grazing fees on operating costs is illustrated in table 13. The increased costs associated with each of four levels of fees were budgeted for two types of Intermountain cattle ranches of several typical sizes. One type of ranch has permits issued by both Federal agencies, while the other has permits from only the Bureau of Land Management. The projected changes in fees were at 20-cent intervals from the 1960 rate of 20 cents per animal-unit month charged by the Bureau of Land Management and the average 60 cents per animal-unit month charged by the Forest Service.

If the 1960 rate of grazing fees were increased 20 cents per animal-unit month, the average net ranch income would be reduced $256 (from $4,361 to $4,105) on the cattle ranches.[5] The reduction in average net ranch incomes on sheep ranches would be $519 (from $5,946 to $5,427).

5/ In computing the regional average of net ranch income, cattle ranches in the Southern Intermountain and the Southern Desert areas were grouped.

Table 13.--Additional operating costs associated with 4 levels of increase in grazing fees on 2 types of Intermountain cattle ranches, 1960

Type of ranch, and size of ranch in number of animal units 1/	Permitted AUM's 2/	Additional operating costs with increase in grazing fees of--3/			
		20 cents	40 cents	60 cents	80 cents
	Number	Dollars	Dollars	Dollars	Dollars
BLM and FS permits (BLM-Sp,F)(FS-S):					
104 AU----------------------	355	73	146	219	292
263 AU----------------------	797	164	328	492	656
650 AU----------------------	2,286	471	942	1,413	1,884
BLM permit only (BLM-S)(FS-0):					
122 AU----------------------	525	108	216	324	432
321 AU----------------------	1,203	248	496	743	992
557 AU----------------------	1,998	412	824	1,236	1,648
881 AU----------------------	2,934	604	1,209	1,812	2,416
1,960 AU--------------------	8,250	1,699	3,398	5,097	6,096

1/ Type of ranch is defined by grazing patterns on Federal range: Sp = spring; S = summer; F = fall; 0 = none.

2/ Animal-unit months.

3/ Includes interest of 6 percent for 6 months.

The average reductions would vary considerably among ranching areas (table 14). The impact of increases in grazing fees would be greatest on large ranches in the Intermountain area, which depend heavily on seasonal Bureau of Land Management and Forest Service ranges, and in the Southern areas, which have yearlong grazing. Reductions in net ranch incomes with a 20-cent fee increase would vary from $25 to $1,699 for cattle ranches and from $8 to $3,137 for sheep ranches.

The pattern of changes in net ranch income on the budgeted cattle and sheep ranches with a 20-cent and an 80-cent increase in grazing fees is shown in table 15. A 20-cent increase in grazing fees increased the costs of about 80 percent of the cattle ranches and about 63 percent of the sheep ranches less than $500. However, an 80-cent increase in grazing fees increased the costs of 67 percent of the cattle ranches and 80 percent of the sheep ranches more than $500.

Fee cost differences in 1960 average fees existed among the budgeted sheep and cattle ranches. Two principal reasons for this were (1) differences in the animal-unit months of Federal range grazing and (2) differences in the fees charged by the two Federal land agencies. Since, however, the cost to the ranches of the grazing fee increases is not affected by the type of permit held, the increased fee costs vary mainly by ranch size. Grazing fees averaged about $1.40 per animal unit in livestock inventories on the cattle ranches and about $1.60 on the sheep ranches in 1960. Each 20-cent increase in grazing fees would increase costs on cattle ranches about $0.95 and on sheep ranches about $1.18 per animal unit.6/

A 20-cent increase in grazing fees would reduce average net income on cattle ranches 5.9 percent and average net income on sheep ranches 8.7 percent. Four 20-cent increases in grazing

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6/ The cattle ranches have an average grazing permit of 4.7 AUM's per animal unit and the sheep ranches have an average grazing permit of 5.8 AUM's per animal unit.

Table 14.--Reduction in net ranch income on representative ranches associated with specified increases in grazing fees, by ranching area, Western Region, 1960

Ranching area	Cattle ranches with increase per AUM of--		Sheep ranches with increase per AUM of--	
	20 cents	80 cents	20 cents	80 cents
	Dollars	Dollars	Dollars	Dollars
California	96	385	---	---
Intermountain	414	1,655	1,515	6,060
Mountain	183	730	---	---
Northern Great Plains	122	487	167	666
Northwest	131	523	259	1,036
Southern Desert and Southern Intermountain	317	1,269	---	---
Southwest Desert	530	2,118	1/133	1/532

1/ Includes 2 Southern Intermountain sheep ranches.

fees, an increase of 80 cents, would reduce average net incomes 23.5 percent and 34.9 percent, respectively. Starting with the 12 cattle ranches with negative incomes at 1960 average fees, about two additional cattle ranches would have negative net incomes with each 20-cent fee increase. Approximately one additional sheep ranch would have a negative net income with each 20-cent increase in grazing fees. Ranches not covering costs at the 80-cent grazing fee increase level had less than 150 animal units on the cattle ranches compared with 1,714 animal units on the sheep ranch.

SHORT-RUN EFFECT OF A 20-PERCENT REDUCTION IN PERMITTED USE

When grazing is reduced, a rancher loses the use of some public range. In the short-run he, as an individual rancher, may compensate for this loss by renting other range, pasture, or cropland; by buying feeds and additional land; or by reducing the size of his livestock herd. The best course of action differs among ranchers, and depends on the individual circumstances and opportunities. Obviously a large number of ranchers could not quickly rent or buy additional land.

In this study only the alternative of reducing the size of the herd was analyzed. It was assumed that a rancher would have to adjust to a 20-percent reduction in permitted use by the beginning of the next grazing season, and that he would do so by reducing the number of animals in his herd.[7]

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[7] Generally, reductions in permitted use are initiated by the Federal land agencies as individual cases, and normally do not affect all permittees in a local area. Also, a rancher usually has more than 1 year (up to 3 years) in which to adjust his ranching operation. Since 1 year might be the actual case, and because of the extent of coverage of ranching operations, it was found necessary to simplify the analysis by telescoping the time period that might be involved.

Table 15.--Number of sheep and cattle ranches that would have specified reductions in net ranch income by an increase in grazing fees of 20 and 80 cents per animal-unit month, by ranching area, Western Region, 1960

Ranching area	Reduction in net ranch income by specified increases in grazing fees																	
	Less than $101		$101-$250		$251-$500		$501-$1,000		$1,001-$1,500		$1,501-$2,500		$2,501-$4,000		$4,001-$6,000		Over $6,000	
	20¢	80¢	20¢	80¢	20¢	80¢	20¢	80¢	20¢	80¢	20¢	80¢	20¢	80¢	20¢	80¢	20¢	80¢
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Cattle Ranches (68)1/																		
California (9)	6	0	3	3	0	5	0	1	0	0	0	0	0	0	0	0	0	0
Intermountain (17)	4	0	4	0	4	5	4	3	0	2	1	3	0	3	0	0	0	1
Mountain (5)	2	0	2	1	1	2	0	1	0	0	0	1	0	0	0	0	0	0
Northern Great Plains (3)	2	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Northwest (9)	5	1	3	2	1	2	0	3	0	1	0	0	0	0	0	0	0	0
Southern Desert (3)	1	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0
Southern Intermountain (11)	4	1	0	2	4	1	2	0	1	4	0	2	0	0	0	1	0	0
Southwest Desert (11)	0	0	1	0	5	1	4	0	1	4	0	3	0	2	0	1	0	0
Total	24	2	15	9	15	18	11	10	2	11	1	10	0	5	0	2	0	1
Sheep Ranches (16)																		
Intermountain (8)	0	0	0	0	2	0	2	0	1	1	1	1	2	2	0	1	0	3
Northern Great Plains (2)	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Northwest (2)	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0
Southern Intermountain (2)	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Southwest Desert (2)	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0
Total	3	1	3	0	4	2	2	3	1	3	1	1	2	2	0	1	0	3

1/ Excludes a 1,495 animal-unit stocker-feeder ranch in the Southwest Desert ranching area.

NOTE: Number of ranches in each ranching area is indicated in parentheses.

The size of the reductions in number of animals in the herd would be closely related to the extent of dependency upon Federal range for grazing. The greatest reduction in the herd would generally occur when the grazing permit is yearlong. The effect of a 20-percent reduction in public land grazing use on the size and composition of the herd on three types and sizes of California and Intermountain cattle ranches is shown in table 16.

Table 16.--Effect of a 20-percent reduction in permitted grazing use on January 1 inventory numbers of cattle, 3 sizes and types of cattle ranches, California and Intermountain ranching areas

January 1 inventory by class of livestock	263 animal unit (BLM-Sp,F) (FS-S) 1/		881 animal unit (BLM-S) (FS-0) 2/		177 animal unit (BLM-Sp,S,F) (FS-0) 3/	
	Before	After	Before	After	Before	After
	Number	Number	Number	Number	Number	Number
Cows	149	133	500	453	100	92
Heifers	26	23	90	81	13	12
Replacement heifers	31	27	92	83	14	13
Yearlings	19	17	243	218	41	38
Bulls	9	8	22	20	4	4
Horses	6	4	12	12	4	4

1/ Grazing permit was reduced 184.5 animal-unit months of grazing.
2/ Grazing permit was reduced 588 animal-unit months of grazing.
3/ Grazing permit was reduced 87.5 animal-unit months of grazing.

The effect on net ranch income of a 20-percent reduction in permitted use was evaluated for 59 of the 69 representative cattle ranches and 15 of the 16 representative sheep ranches. The average net income on the cattle ranches in 1960 was $4,148 and on the sheep ranches, $5,943. If, as assumed in this study, the ranchers would keep fewer animals after a 20-percent reduction in permitted grazing on the Federal range, the average net income of the 59 cattle ranches would be reduced $1,019 and of the 15 sheep ranches $2,113. Or, net incomes would be reduced about 25 percent on the cattle ranches and 36 percent on the sheep ranches. The greater average effect for the sheep ranches is influenced by their greater average size. About 44 percent of the sheep ranches budgeted have more than 650 animal units compared with 10 percent of the cattle ranches.

Among the ranching areas, the reduction in average net income would be from $335 in the Mountain area to $2,267 in the Intermountain area for the cattle ranches and from $192 in the Southern Intermountain-Southwest Desert area to $5,423 in the Intermountain area for sheep ranches. The loss in net ranch income that might have been caused by the 20-percent reduction in the grazing permit averaged $4.15 per animal unit for the cattle ranches and $4.12 per animal unit for the sheep ranches. Five additional cattle ranches, a total of 17, would not cover all costs with the 20-percent permit reduction. It did not cause the net ranch income of additional sheep ranches to be negative.

Not all the ranches would have a loss in net ranch income. Cash cost reductions and increased grain sales would enable three cattle ranches to increase their net ranch income; the largest increase was $179, after animals were eliminated from the herd.

In general, the amount by which net incomes of individual ranches would be reduced was closely related to size of ranch and number of animal unit months in the grazing permit. For example, the highest percentage reduction in net ranch incomes would be for cattle and sheep ranches which have more than 650 animal units and yearlong grazing permits. Animal-unit months of Federal range grazing do not, however, by themselves, adequately indicate the type or degree of a ranch's dependency on Federal range forage. Dependency is also related to the seasonality and the duration of Federal range grazing compared with the seasonality of the grazing periods and the animal-unit months of grazing obtained from owned and leased land. Table 17 shows the number of representative cattle and sheep ranches in each ranching area on which net ranch income would be changed in the specified amounts by a 20-percent reduction in the permitted grazing and the assumed consequent reduction in the size of the herd.

LONG-RUN CONSIDERATIONS IN AN INCREASE IN GRAZING FEES AND A REDUCTION IN PERMITTED GRAZING

The foregoing discussion has assumed that in the short run the full impacts of increases in grazing fees and a reduction in permitted use of the range would be reflected in higher costs and lower incomes of ranchers because they would have little, if any, opportunities to make adjustments in their ranching operations. In the long run, however, incomes might be supported through profitable investments for improving the base ranch property or the range through such practices as reseeding, fertilizing, brush and weed control, fencing and water development, which would increase the productivity of the land. This increased productivity would be reflected in terms of higher birth rates, lower death losses, heavier weights, and higher grades per animal. Another way by which many ranches might meet increased costs would be by enlarging the size of their operations. The ranch budgets developed in this study indicate that a herd of about 400 or more animal units is needed to obtain enough income to cover operating costs and to provide for family living and a return on invested capital and management equivalent to that which can be earned in alternative business opportunities. The average size of ranches which use Federal rangeland is about 200 head of cattle on cattle ranches and between 1, 500 and 2, 000 head of sheep on sheep ranches.

If ranchers cannot regain temporary losses in income through such measures as mentioned above, and they become permanent, adjustments in the capital structure of the ranches will follow.

Since Federal range is normally used in conjunction with private range and pasture, cropland, or water resources, and the profit-producing capacity of the entire ranch is capitalized in the private property, continued loss of income through increases in grazing fees or reductions in the grazing permits would eventually lower the value of the base property, notable land. For example, the first 20-cent increase in grazing fees from 1960 levels could eventually reduce the average value of the budgeted cattle ranches by $5, 120 ($256 capitalized at 5 percent) and the budgeted sheep ranches by $10, 380.

The actual change in the capital structure of the ranch, however, would also depend upon factors other than those associated with net income from livestock production. Trends in livestock prices, competitive uses of land, and other environmental developments might tend to, or more than, absorb the downward pressures of changes in the levels of grazing fees and permitted use.

Table 17.--Number of ranches with specified reductions in net ranch incomes through a reduction in size of herd after a 20-percent reduction in grazing permit, by type of ranch and ranching area, Western Region, 1960

Ranching area	Reduction in net ranch income								
	$100 or less	$101-$250	$251-$500	$501-$1,000	$1,001-$1,500	$1,501-$2,500	$2,501-$4,000	$4,001-$6,000	Over $6,000
	Number	Number	Number	Number	Number	Number	Number	Number	Number
Cattle Ranches (59)1/									
California (9)---------------	0	0	3	4	1	1	0	0	0
Intermountain (17)-----------	2/ 1	0	2	4	2	3	1	3	1
Mountain (5)-----------------	2/ 2	1	0	1	1	0	0	0	0
Northwest (3)----------------	1	0	1	1	0	0	0	0	0
Southern Desert (3)----------	0	0	1	1	0	0	1	0	0
Southern Intermountain (11)--	2	1	0	3	2	2	1	0	0
Southwest Desert (11)--------	0	0	0	4	4	2	1	0	0
Total----------------	6	2	7	18	10	8	4	3	1
Sheep Ranches (15)1/									
Intermountain (8)------------	0	0	0	0	1	0	1	2	4
Northern Great Plains (2)----	0	0	1	1	0	0	0	0	0
Northwest (1)----------------	0	0	0	0	0	1	0	0	0
Southern Intermountain (2)---	1	1	0	0	0	0	0	0	0
Southwest Desert (2)---------	0	1	1	0	0	0	0	0	0
Total----------------	1	2	2	1	1	1	1	2	4

1/ Number of ranches for which a grazing permit reduction was calculated.
2/ Ranch income increased because of an increase in crop sales.

NOTE: The number of ranches in each ranching area is indicated in parentheses.

APPENDIX

Table 18.--Cattle ranches: Budgets for representative types and sizes, Western Region, 1960 1/

Item	Unit	California								
		Type (BLM-0) (FS-S)				Type (BLM-Sp,S) (FS-0)		Type (BLM-Sp,S,F) (FS-0)		Type (BLM-Sp,S,F) (FS-S)
		69 AU	120 AU	235 AU	420 AU	76 AU	277 AU	101 AU	177 AU	323 AU
Owned land	Acre	810	1,055	2,664	4,336	1,516	3,123	725	2,713	2,938
Leased land	Acre	420	480	0	3,024	647	2,479	1,268	2,464	2,694
Total	Acre	1,230	1,535	2,664	7,360	2,163	5,602	1,993	5,177	5,632
Livestock 3/	No.	73	124	255	458	83	266	100	176	358
Investment 4/	Dol.	51,403	78,654	151,044	220,843	63,792	145,547	55,873	119,422	164,781
AUM's in grazing permit	No.	180	300	400	580	452	550	242	438	220
Feed units in grazing permit	Pct.	28	26	18	14	50	17	27	27	28
Production										
Beef cattle 5/	Cwt.	264	460	939	1,709	247	756	267	503	1,156
Per animal unit	Lb.	383	400	407	325	273	264	284	358	273
Ranch income and costs										
Gross income 6/	Dol.	4,870	8,457	16,834	30,683	4,913	14,601	5,034	9,115	21,232
Cash costs	Dol.	3,794	5,846	11,331	21,573	3,917	11,618	3,100	7,740	10,946
Depreciation 7/	Dol.	1,577	2,148	3,090	4,729	1,464	2,652	1,178	2,775	5,299
Operator and family labor	Dol.	3,135	3,705	3,420	3,420	1,710	3,420	2,565	3,420	3,420
Net cash ranch income	Dol.	1,076	2,611	5,503	9,110	996	2,983	1,934	1,375	10,286
Net ranch income 8/	Dol.	-501	463	2,413	4,381	-468	331	756	-1,400	4,987
Rate of return on investment 9/	Pct.	-.97	.59	1.59	1.98	-.76	.23	1.35	-1.17	3.03

See footnotes at end of table.

Table 18.--Cattle ranches: Budgets for representative types and sizes, Western Region, 1960 1/--Continued

Item	Unit	Intermountain							
		Type (BLM-S) (FS-0)				Type (BLM-Sp,S,F) (FS-0)			Type (BLM-S) (FS-S)
		122 AU	321 AU	881 AU	1,960 AU	72 AU	233 AU	694 AU	557 AU
Owned land	Acre	1,441	2,826	5,660	20,517	423	1,273	3,592	5,790
Leased land	Acre	0	0	0	0	51	540	1,334	0
Total	Acre	1,441	2,826	5,660	20,517	474	1,813	4,926	5,790
Livestock 3/	No.	122	330	959	2,023	82	260	873	588
Investment 4/	Dol.	77,367	169,113	346,990	941,546	49,018	111,901	271,874	300,711
AUM's in grazing permit	No.	525	1,203	2,934	8,250	318	1,070	3,354	1,998
Feed units in grazing permit	Pct.	45	39	35	42	46	48	50	38
Production									
Beef cattle 5/	Cwt.	351	1,014	2,790	5,724	232	701	2,251	1,718
Per animal unit	Lb.	288	316	317	292	322	301	324	308
Ranch income and costs									
Gross income 6/	Dol.	6,188	18,997	51,611	104,997	6,612	14,421	37,908	32,060
Cash costs	Dol.	4,168	9,463	26,791	61,094	3,081	8,316	20,113	14,787
Depreciation 7/	Dol.	2,206	4,276	7,193	15,950	1,543	3,258	7,027	5,465
Operator and family labor	Dol.	2,565	3,420	3,420	3,420	2,428	5,603	3,735	3,420
Net cash ranch income	Dol.	2,020	9,534	24,820	43,903	3,531	6,105	17,795	17,273
Net ranch income 8/	Dol.	-186	5,258	17,627	27,953	1,988	2,847	10,768	11,808
Rate of return on investment 9/	Pct.	-.24	3.12	5.08	2.97	4.06	2.54	3.96	3.93

See footnotes at end of table.

Table 18.--Cattle ranches: Budgets for representative types and sizes, Western Region, 1960 1/--Continued

Item	Unit	Intermountain--Continued								
		Type (BLM-Sp,S,F,W) (FS-0)			Type (BLM-Sp,F) (FS-S)			Type (BLM-F,W,Sp) (FS-S)		
		77 AU	264 AU	600 AU	104 AU	263 AU	650 AU	87 AU	236 AU	466 AU
Owned land	Acre	392	802	1,862	922	2,790	2,930	540	1,045	1,330
Leased land	Acre	0	45	160	0	0	1,369	0	0	1,128
Total	Acre	392	847	2,022	922	2,790	4,299	540	1,045	2,458
Livestock 3/	No.	82	269	608	94	240	625	89	230	452
Investment 4/	Dol.	49,536	114,852	226,524	65,000	157,000	247,005	60,094	123,790	227,107
AUM's in grazing permit	No.	430	1,668	3,715	355	797	2,286	466	1,635	3,160
Feed units in grazing permit	Pct.	59	66	65	35	31	36	56	73	66
Production										
Beef cattle 5/	Cwt.	179	585	1,242	275	815	2,031	208	615	1,162
Per animal unit	Lb.	232	222	207	264	310	312	239	261	249
Ranch income and costs										
Gross income 6/	Dol.	3,541	10,055	20,833	4,944	16,012	37,552	5,019	11,768	23,695
Cash costs	Dol.	2,864	5,968	15,289	4,039	7,953	16,867	3,618	6,737	14,643
Depreciation 7/	Dol.	1,648	2,733	4,522	2,283	3,523	6,135	1,536	2,868	4,089
Operator and family labor	Dol.	3,601	6,640	4,358	3,420	3,420	3,420	3,800	4,950	6,200
Net cash ranch income	Dol.	677	4,087	5,544	905	8,059	20,685	1,401	5,031	9,052
Net ranch income 8/	Dol.	-971	1,354	1,022	-1,378	4,536	14,550	-135	2,163	4,963
Rate of return on investment 9/	Pct.	-1.96	1.18	.45	-2.12	2.89	5.89	-.22	1.75	2.19

See footnotes at end of table.

Table 18.--Cattle ranches: Budgets for representative types and sizes, Western Region, 1960 1/--Continued

Item	Unit	Mountain					Northern Great Plains		
		Type (BLM-0) (FS-S)		Type (BLM-Sp,S) (FS-S)			Type (BLM-Y) (FS-0)		
		95 AU	240 AU	101 AU	271 AU	527 AU	64 AU	181 AU	564 AU
Owned land	Acre	242	1,348	890	1,604	2,970	1,539	3,896	11,861
Leased land	Acre	0	0	0	456	690	299	1,551	6,049
Total	Acre	242	1,348	890	2,060	3,660	1,838	5,447	17,910
Livestock 3/	No.	103	249	118	304	586	68	202	631
Investment 4/	Dol.	74,345	140,385	70,736	161,207	290,114	48,508	108,882	320,749
AUM's in grazing permit	No.	260	580	369	1,054	2,170	153	403	1,216
Feed units in grazing permit	Pct.	29	25	38	41	43	25	24	23
Production									
Beef cattle 5/	Cwt.	281	644	341	891	1,678	219	636	1,997
Per animal unit	Lb.	296	268	338	329	318	342	351	354
Ranch income and costs									
Gross income 6/	Dol.	6,535	16,182	5,586	14,634	27,134	7,326	13,367	37,034
Cash costs	Dol.	4,909	9,722	3,198	7,900	16,294	2,918	5,799	18,873
Depreciation 7/	Dol.	1,498	2,340	1,451	3,276	4,619	1,478	2,401	5,734
Operator and family labor	Dol.	2,100	3,850	3,180	3,960	4,680	1,800	1,800	1,800
Net cash ranch income	Dol.	1,626	6,460	2,388	6,734	10,840	4,408	7,568	18,161
Net ranch income 8/	Dol.	128	4,120	937	3,458	6,221	2,930	5,167	12,427
Rate of return on investment 9/	Pct.	.17	2.93	1.32	2.15	2.14	6.04	4.75	3.87

See footnotes at end of table.

Table 18.--Cattle ranches: Budgets for representative types and sizes, Western Region, 1960 1/--Continued

Item	Unit	Northwest								
		Type (BLM-0) (FS-S)			Type (BLM-Sp,F) (FS-0)			Type (BLM-Sp,F) (FS-S)		
		65 AU	180 AU	451 AU	61 AU	181 AU	592 AU	73 AU	185 AU	522 AU
Owned land	Acre	1,114	2,434	3,101	720	2,290	7,970	639	883	2,878
Leased land	Acre	0	0	1,380	0	320	2,560	0	320	1,060
Total	Acre	1,114	2,434	4,481	720	2,610	10,530	639	1,203	3,938
Livestock 3/	No.	70	206	529	65	202	692	80	202	606
Investment 4/	Dol.	63,599	107,487	265,338	44,573	110,757	338,515	55,218	103,252	285,001
AUM's in grazing permit	No.	120	404	980	140	292	1,060	331	738	1,644
Feed units in grazing permit	Pct.	19	24	23	24	16	19	48	41	33
Production										
Beef cattle 5/	Cwt.	281	748	1,867	223	693	2,272	293	704	1,982
Per animal unit	Lb.	432	416	414	366	383	384	401	380	380
Ranch income and costs										
Gross income 6/	Dol.	9,004	12,637	35,090	4,810	11,845	38,521	7,921	13,941	33,962
Cash costs	Dol.	3,261	6,338	18,620	3,088	6,353	23,597	3,337	6,478	21,878
Depreciation 7/	Dol.	1,366	2,192	3,852	1,261	2,263	4,459	1,122	2,059	3,720
Operator and family labor	Dol.	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Net cash ranch income	Dol.	5,743	6,299	16,470	1,722	5,492	14,924	4,584	7,463	12,084
Net ranch income 8/	Dol.	4,377	4,107	12,618	461	3,229	10,465	3,462	5,404	8,364
Rate of return on investment 9/	Pct.	6.89	3.82	4.76	1.03	2.92	3.09	6.27	5.23	2.93

See footnotes at end of table.

Table 18.--Cattle ranches: Budgets for representative types and sizes, Western Region, 1960 1/--Continued

Item	Unit	Southern Desert			Southern Intermountain				
		Type (BLM-Y) (FS-0)			Type (BLM-0) (FS-S)		Type (BLM-0) (FS-Y)		
		68 AU	182 AU	423 AU	35 AU	125 AU	118 AU	240 AU	512 AU
Owned land	Acre	1,157	1,850	4,331	175	840	675	720	1,975
Leased land	Acre	733	2,495	6,366	0	990	0	0	0
Total	Acre	1,890	4,345	10,697	175	1,830	675	720	1,975
Livestock 3/	No.	66	188	400	31	118	114	250	491
Investment 4/	Dol.	38,488	64,694	149,344	21,280	71,400	46,200	73,517	131,327
AUM's in grazing permit	No.	452	1,208	2,631	120	400	1,236	2,556	5,724
Feed units in grazing permit	Pct.	55	55	52	29	27	87	89	93
Production									
Beef cattle 5/	Cwt.	173	497	1,174	100	391	345	766	1,516
Per animal unit	Lb.	255	273	278	286	313	292	319	296
Ranch income and costs									
Gross income 6/	Dol.	3,288	9,808	21,193	2,014	7,546	6,790	14,663	29,431
Cash costs	Dol.	2,430	4,947	12,150	1,447	4,942	5,079	8,752	17,406
Depreciation 7/	Dol.	2,102	3,147	5,802	885	1,659	1,546	2,365	3,994
Operator and family labor	Dol.	1,488	2,232	2,232	2,628	2,628	2,628	2,628	2,628
Net cash ranch income	Dol.	858	4,861	9,043	567	2,604	1,711	5,911	12,025
Net ranch income 8/	Dol.	-1,244	1,714	3,240	-318	945	165	3,546	8,031
Rate of return on investment 9/	Pct.	-3.23	2.65	2.17	-1.49	1.32	.36	4.82	6.12

See footnotes at end of table.

Table 18.--Cattle ranches: Budgets for representative types and sizes, Western Region, 1960 1/--Continued

Item	Unit	Southern Intermountain--Continued						Southwest Desert		
		Type (BLM-Y) (FS-0)			Type (BLM-Sp,F,W) (FS-S)			Type (BLM-W) (FS-0)		Type (BLM-Sp,S,W) (FS-S)
		35 AU	247 AU	471 AU	34 AU	210 AU	337 AU	116 AU	384 AU	444 AU
Owned land	Acre	931	4,525	15,795	278	2,695	3,639	6,527	17,106	3,775
Leased land	Acre	0	3,937	4,387	0	0	0	2,638	0	2,989
Total	Acre	931	8,462	20,182	278	2,695	3,639	9,165	17,106	6,764
Livestock 3/	No.	34	242	490	34	200	350	127	376	383
Investment 4/	Dol.	25,283	115,025	288,578	24,308	93,838	145,241	80,000	256,172	175,276
AUM's in grazing permit	No.	226	1,413	1,728	277	1,673	2,807	1,290	2,674	1,381
Feed units in grazing permit	Pct.	57	45	29	70	68	69	70	61	31
Production										
Beef cattle 5/	Cwt.	100	723	1,438	99	608	1,021	280	1,117	1,049
Per animal unit	Lb.	286	293	305	290	290	308	241	291	236
Ranch income and costs										
Gross income 6/	Dol.	1,888	13,483	28,246	1,851	11,965	19,087	5,285	21,300	18,523
Cash costs	Dol.	1,487	6,723	13,544	1,437	5,685	9,621	4,115	14,013	12,251
Depreciation 7/	Dol.	1,225	4,010	7,730	1,430	4,012	6,214	1,266	5,557	3,976
Operator and family labor	Dol.	1,116	2,232	2,232	1,116	2,232	2,232	1,710	3,420	3,420
Net cash ranch income	Dol.	401	6,760	14,702	414	6,280	9,466	1,170	7,287	6,272
Net ranch income 8/	Dol.	-824	2,750	6,972	-1,016	2,268	3,251	-96	1,730	2,296
Rate of return on investment 9/	Pct.	-3.26	2.39	2.42	-4.18	2.42	2.24	-.12	.68	1.31

See footnotes at end of table.

Table 18.--Cattle ranches: Budgets for representative types and sizes, Western Region, 1960 1/--Continued

Item	Unit	Southwest Desert								
		Type (BLM-Y) (FS-0)				Type (BLM-Y) (FS-0)				Type (BLM-Sp,F,W) (FS-0) 2/
		170 AU	250 AU	450 AU	725 AU	200 AU	450 AU	700 AU	1,300 AU	1,495 AU
Owned land	Acre	120	120	320	480	1,280	2,560	4,160	7,680	4,000
Leased land	Acre	4,800	7,120	12,780	26,540	4,800	10,880	16,480	30,720	48,000
Total	Acre	4,920	7,240	13,100	27,020	6,080	13,440	20,640	38,400	52,000
Livestock 3/	No.	199	297	536	862	173	390	747	1,391	158
Investment 4/	Dol.	97,113	142,681	263,131	422,385	183,029	386,962	609,557	1,122,979	1,026,340
AUM's in grazing permit	No.	1,690	2,485	4,472	7,206	540	1,224	1,854	3,456	2,700
Feed units in grazing permit	Pct.	83	83	83	83	45	45	45	45	48
Production										
Beef cattle 5/	Cwt.	401	615	1,095	1,788	488	1,093	1,718	3,212	6,356
Per animal unit	Lb.	236	246	243	247	244	243	245	247	425
Ranch income and costs										
Gross income 6/	Dol.	6,839	10,307	18,164	29,321	8,569	18,929	28,344	52,660	521,530
Cash costs	Dol.	3,949	5,035	11,129	18,698	4,047	9,975	13,998	27,563	477,111
Depreciation 7/	Dol.	598	1,147	1,998	3,034	1,179	1,943	3,591	6,042	2,913
Operator and family labor	Dol.	2,500	5,000	5,000	2,500	5,000	5,000	5,000	5,000	0
Net cash ranch income	Dol.	2,890	5,272	7,035	10,623	4,522	8,954	14,346	25,097	44,419
Net ranch income 8/	Dol.	2,292	4,125	5,037	7,589	3,343	7,011	10,755	19,055	41,506
Rate of return on investment 9/	Pct.	2.36	2.89	1.91	1.80	1.83	1.81	1.76	1.70	4.04

1/ Pattern of seasonal grazing as follows: BLM = Bureau of Land Management, FS = Forest Service, Sp = spring, S = summer, F = fall, W = winter, Y = yearlong, 0 = none. AU based on annual feed requirements. Total AUM's of feed required for a year, divided by 12 months = average animal unit equivalents on the ranch.

2/ Basic cow herd of 150 cows plus a stocker steer herd.

3/ January 1 inventory numbers.

4/ Includes investment in owned land, livestock, buildings and improvements, and machinery and equipment. Land and livestock are valued at average 1960 market value at each locality. Buildings, land improvements, and machinery and equipment are valued at 1960 replacement prices less obsolescence and depreciation.

5/ Total live weight produced and sold.

6/ Income at projected prices for livestock and crops. Total includes Government payments.

7/ Includes depreciation on equipment, buildings, and purchased livestock.

8/ Net ranch income: gross receipts less cash cost and depreciation.

9/ Net ranch income divided by investment.

Table 19.--Sheep ranches: Budgets for representative types and sizes, Western Region, 1960 1/

Item	Unit	Intermountain							
		Type (BLM-F,W,Sp) (FS-S)		Type (BLM-F,W,Sp) (FS-S)					
		320 AU	717 AU	258 AU	677 AU	1,714 AU	2,148 AU	886 AU	1,714 AU
Owned land	Acre	3,100	9,680	4,105	8,776	29,614	48,337	18,154	41,187
Leased land	Acre	2,000	10,760	1,950	7,209	18,768	21,750	12,289	24,870
Total	Acre	5,100	20,440	6,055	15,985	48,382	70,087	30,443	66,057
Livestock 2/	No.	1,603	3,594	1,301	3,405	8,606	10,785	4,458	8,606
Investment	Dol.	153,601	329,140	125,617	252,739	589,470	743,353	318,971	555,645
AUM's in grazing permit	No.	2,215	4,810	1,439	4,580	12,341	15,222	6,404	11,826
Feed units in grazing permit	Pct.	58	56	46	56	60	57	60	59
Production									
Sheep and lambs 3/	Cwt.	1,009	1,962	717	1,637	3,463	4,085	1,685	2,846
Per animal unit	Lb.	315	274	278	242	202	190	190	166
Wool	Cwt.	138	305	128	338	856	1,072	442	856
Per animal unit	Lb.	43	43	49	50	50	50	50	50
Ranch income and costs									
Gross income 4/	Dol.	24,253	48,960	20,751	48,920	112,454	136,376	55,040	101,268
Cash costs	Dol.	13,048	32,844	13,388	33,494	81,841	98,857	43,879	83,158
Depreciation 5/	Dol.	4,374	3,635	4,212	7,643	10,038	11,889	5,244	9,115
Operator and family labor	Dol.	6,775	5,100	4,460	5,490	6,305	6,305	5,490	6,305
Net cash ranch income	Dol.	11,205	16,116	7,363	15,426	30,613	37,519	11,161	18,110
Net ranch income 6/	Dol.	6,831	12,481	3,151	7,783	20,575	25,630	5,917	8,995
Rate of return on investment 7/	Pct.	4.45	3.79	2.50	3.08	3.49	3.45	1.86	1.62

See footnotes at end of table.

Table 19.--Sheep ranches: Budgets for representative types and sizes, Western Region, 1960 1/--Continued

Item	Unit	Northern Great Plains		Northwest		Southern Intermountain		Southwest Desert	
		Type (BLM-Y) (FS-0)		Type (BLM-Sp,S,F,) (FS-S)		Type (BLM-Y) (FS-0)		Type (BLM-Sp) (FS-0)	
		229 AU	482 AU	220 AU	396 AU	28 AU	73 AU	436 AU	1,102 AU
Owned land	Acre	5,266	9,849	3,293	6,021	640	1,920	0	672
Leased land	Acre	1,110	2,640	0	0	704	1,600	4,241	12,320
Total	Acre	6,376	12,489	3,293	6,021	1,344	3,520	4,241	12,992
Livestock 2/	No.	1,099	2,376	1,161	2,103	129	389	2,180	5,517
Investment	Dol.	128,664	250,637	141,290	205,419	15,185	30,992	47,303	119,302
AUM's in grazing permit	No.	471	1,145	886	1,451	171	544	712	1,442
Feed units in grazing permit	Pct.	17	20	33	30	60	63	17	17
Production									
Sheep and lambs 3/	Cwt.	666	1,341	760	1,518	70	190	1,544	3,677
Per animal unit	Lb.	291	278	345	383	252	260	450	435
Wool	Cwt.	102	222	115	209	7	23	156	388
Per animal unit	Lb.	45	46	52	53	27	32	48	49
Ranch income and costs									
Gross income 4/	Dol.	16,914	33,834	21,125	36,021	1,429	4,141	39,782	99,114
Cash costs	Dol.	10,010	18,653	12,001	25,028	730	2,886	30,595	80,322
Depreciation 5/	Dol.	4,471	6,531	2,715	4,604	417	1,378	8,054	18,397
Operator and family labor	Dol.	2,552	3,500	3,600	2,400	1,584	1,584	3,420	3,420
Net cash ranch income	Dol.	6,904	15,181	9,124	10,993	699	1,254	9,187	18,792
Net ranch income 6/	Dol.	2,433	8,650	6,409	6,389	282	-124	1,133	395
Rate of return on investment 7/	Pct.	1.89	3.45	4.54	3.11	1.86	-.40	2.40	.33

1/ Pattern of seasonal grazing as follows: BLM = Bureau of Land Management, FS = Forest Service, Sp = spring, S = summer, F = fall, W = winter, Y = yearlong, 0 = none. Ranch size based on annual feed requirements for the ranch. Total AUM's of feed required for a year, divided by 12 months = average animal unit equivalents on the ranch.

2/ January 1 inventory numbers.

3/ Total sheep and lambs produced and sold. All classes of sheep included.

4/ Gross income at projected prices for livestock and wool; includes incentive payments and crop sales.

5/ Includes depreciation on equipment, buildings, and purchased livestock.

6/ Net ranch income: gross receipts less cash costs and depreciation.

7/ Net ranch income divided by investment.

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